REMARKS

This Amendment is fully responsive to the final Office Action dated May 7, 2009, issued in connection with the above-identified application. Claims 14-26 are pending in the present application. With this Amendment, claims 14 and 26 have been amended. No new matter has been introduced by the amendments made to the claims. Favorable reconsideration is respectfully requested.

In the Office Action, claim 26 has been rejected under 35 U.S.C. 102(b) as being anticipated by Greier et al. (U.S. Publication No. 2002/0149598, hereafter "Greier"); and claims 14-16 and 23-25 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Greier.

The Applicants have amended independent claims 14 and 26 to help further distinguish the present invention from the cited prior art. For example, independent claim 14 (as amended) recites the following features:

"[a] matrix-type display apparatus which drives a display panel including a plurality of pixels disposed in matrix form and displays an image, comprising:

a converting portion adapted to gamma-convert an input video signal, using n (which is an integer of two or above) pairs of gamma-characteristics each made up of first and second gamma-characteristics different from each other, the gamma-characteristics being a transmittance characteristic according to an input level; and

a selecting portion adapted to specify a transmittance to be used for display based on the input video signal, to select one pair of gamma-characteristics from among the n pairs of gamma-characteristics according to the specified transmittance to be used for display, and to select an output supplied to the display panel from among the 2n outputs which are gamma-corrected by said converting portion, so that a ratio between a first distribution area of pixels driven by the video signal gamma-corrected by use of the first gamma-characteristic of the selected pairs of gamma-characteristics and a second distribution area of pixels driven by the video signal gamma-corrected by use of the second gamma-characteristic of the selected pairs of gamma-characteristics is equal to a distribution area ratio specified in advance for the selected pairs of gamma-characteristics" (Emphasis added).

The features emphasized above in independent claim 14 are similarly recited in independent claim 26 (as amended). Claims 14 and 26 have been amended to incorporate the features directed to "the gamma-characteristics being a transmittance characteristic according to an input level." This feature (recited in independent claims 14 and 26) is fully supported by the Applicants' disclosure (see e.g., lines 7-8, page 2).

The present invention (as recited in independent claims 14 and 26) is directed, in part, to a gamma-characteristic that indicates a curve which changes exponentially because the gamma-characteristics are a transmittance characteristic according to an input level. A pair of gamma-characteristics indicates two curves which change exponentially, and n pairs of gamma-characteristics indicate n pairs of curves, wherein each pair of curves are two curves which change exponentially.

In Figs. 2 and 4 of the present application, the first gamma-characteristic γ1A and the second gamma-characteristic γ2A constitute the first pair of gamma-characteristics; the first gamma-characteristic γ1A is one of the gamma-characteristics, and the second gamma-characteristic γ2A is the other one of the gamma-characteristics. The first gamma-characteristic γ1B and the second gamma-characteristic γ2B constitute the second pair of gamma-characteristics; the first gamma-characteristic γ 1B is one of the gamma-characteristics, and the second gamma-characteristic γ2B is the other one of the gamma-characteristics.

Likewise, the first gamma-characteristic γ1C and the second gamma-characteristic γ2C constitute the third pair of gamma-characteristics; the first gamma-characteristic γ1C is one of the gamma-characteristics, and the second gamma-characteristic γ2C is the other one of the gamma-characteristics. In this way, six curves (γ1A, γ2A, γ1B, γ2B, γ1C, and γ2C) that change exponentially constitute three pairs of gamma-characteristics.

In the Office Action, the Examiner relies on Greier for disclosing or suggesting all the features recited in independent claims 14 and 26. In particular, the Examiner alleges that Greier teaches 255 different gamma-characteristics because Greier discloses that the gamma-characteristics in the equation (4) include a pair of gamma-characteristics (see ¶[0095]), and 255 gradation levels are provided with respect to 8-bit color data (see ¶[0063]; and ¶[0099]-¶[0100]).

However, the gamma-characteristics of the present invention (as recited in amended claims 14 and 26) do not indicate "a transmittance according to an input level" i.e. a certain point on a curve which changes exponentially, but indicate "a transmittance characteristic according to an input level" i.e. a curve which changes exponentially. Accordingly, Greier merely discloses two different gamma-characteristics i.e. a pair of gamma characteristics that constitute 255 luminance values with respect to 255 gradation levels, and neither discloses nor suggests n pairs of gamma characteristics.

Accordingly, Greier fails to disclose or suggest at least the following features recited in amended claims 14 and 26:

"specify a transmittance to be used for display based on the input video image, and select one pair of gamma-characteristics from among the n pairs of gamma-characteristics according to the specified transmittance to be used for display"; and

"select an output supplied to the display panel from among the gamma-corrected 2n outputs, so that a ratio between a first distribution area of pixels driven by the video signal gamma-corrected by use of the first gamma-characteristic of the selected pairs of gamma-characteristics and a second distribution area of pixels driven by the video signal gamma-corrected by use of the second gamma-characteristics of the selected pairs of gamma-characteristics is equal to a distribution area ratio specified in advance for the selected pairs of gamma-characteristics."

Moreover, in amended claims 14 and 26 (i.e., having the above features)

a transmittance to be used for display is specified based on the input video image;

one pair of gamma-characteristics, which is correlated in advance to a range to which the specified transmittance to be used for display belongs, is selected from among the n pairs of gamma-characteristics; and

an output supplied to the display panel is selected from among the gamma-corrected 2n outputs, so that a ratio between a first distribution area of pixels driven by the video signal gamma-corrected by use of the first gamma-characteristic of the selected pairs of gamma-characteristics and a second distribution area of pixels driven by the video signal gamma-

corrected by use of the second gamma-characteristics of the selected pairs of gamma-characteristics is equal to a distribution area ratio specified in advance for the selected pairs of gamma-characteristics.

In the present invention (as recited in independent claims 14 and 26), the range of a transmittance to be used for display is divided into three ranges i.e. a low transmittance range, an intermediate transmittance range, and a high transmittance range. In the case where the transmittance to be used for display belongs to the low transmittance range, the first pair of gamma-characteristics γlA and γ2A is selected; and as shown in Fig. 5A, the display panel is driven so that the ratio between the distribution area of pixels driven by use of an output of the first gamma-characteristic γlA, and the distribution area of pixels driven by use of an output of the second gamma-characteristics γ2A is equal to 1/4:3/4 (see also Figs. 2 through 4).

In the case where the transmittance to be used for display belongs to the intermediate transmittance range, the second pair of gamma-characteristics γ 1 Band γ2B is selected; and as shown in Fig. 5B, the display panel is driven so that the ratio between the distribution area of pixels driven by use of an output of the first gamma-characteristic γlB, and the distribution area of pixels driven by use of an output of the second gamma-characteristic γ28 is equal to 2/4:2/4.

In the case where the transmittance to be used for display belongs to the high transmittance range, the third pair of gamma-characteristics γlC and γ2C is selected; and as shown in Fig. 5C, the display panel is driven so that the ratio between the distribution area of pixels driven by use of an output of the first gamma-characteristic γ1C, and the distribution area of pixels driven by use of an output of the second gamma-characteristics γ2C is equal to 3/4:1/4.

As a result, a novel effect of the video signals gamma-corrected by use of the first and the second gamma-characteristics most suitable for a transmittance to be used for display are selected at the most suitable distribution area ratio for the transmittance to be used for display. Thus, a good viewing angle characteristic in a wide transmittance range is obtained.

Greier fails to disclose or suggest the above features and advantages provided by the present invention (as recited in amended claims 14 and 26). Accordingly, Greier would not anticipate or render obvious independent claims 14 and 26 (as amended). Likewise, Greier

would not anticipate or render obvious claims 15, 16 and 23-25 at least by virtue of their dependencies from independent claim 14.

In the Office Action, claims 17-22 have been rejected under 35 U.S.C. 103(a) as being unpatentable Greier in view of Yamashita et al. (U.S. Publication No. 2001/0026258). Claims 17-22 depend from independent claim 14. As noted above, Greier fails to disclose or suggest the features recited in independent claim 14 (as amended). Additionally, Yamashita fails to overcome the deficiencies noted above in Greier. Accordingly, no combination of Greier and Yamashita would result in, or otherwise render obvious, claims 17-22 at least by virtue of their dependencies from independent claim 14.

In light of the above, the Applicants respectfully submit that all the pending claims are patentable over the prior art of record. The Applicants respectfully request that the Examiner withdraw the rejections presented in the outstanding Office Action, and pass the present application to issue. The Examiner is invited to contact the undersigned attorney by telephone to resolve any remaining issues.

Respectfully submitted,

Katsuyuki ARIMOTO et al.
/Mark D. Pratt/
By: 2009.08.07 14:37:51 -04'00'
Mark D. Pratt
Registration No. 45794
Attorney for Applicants

MDP/ats
Washington, D.C. 20005-1503
Telephone (202) 721-8200
Facsimile (202) 721-8250
August 7, 2009